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EXAMINER
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WANG, JIN CHENG

ART UNIT	PAPER NUMBER
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2628

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/774,315	HAO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jin-Cheng Wang	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

Applicant's submission filed on 10/26/2006 has been entered. Claims 1-3, 10-11, 16-120 have been amended. Claims 1-20 are pending in the application.

### *Response to Arguments*

Applicant's arguments filed on October 26, 2006 has been considered, but are moot in view of the new ground(s) of rejection set forth in the present Office Action.

Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by D. Keim, M.C. Hao; U. Dayal; “**Hierarchical pixel bar charts**”, IEEE Trans. On Visualization and Computer Graphics, Vol. 8, No. 3, July-Sept. 2002, pp. 255 – 269 (hereinafter Keim-2002).

The cited reference teaches the claim limitation of deriving a graphical illustration that displays a **comparison** of the numerical values. The claim limitation requires displaying a comparison of the numerical values of the aggregated data, as opposed to displaying the numerical values of the aggregated data. The relevant teaching of the cited reference can be found at column 1, Page 264. Threshold interaction and Average/Median Lines on the pixel bar charts allow the comparison of numerical values of the aggregated data to be shown. The cited reference teaches thresholds can be interactively changed and thus displayed as needed and **the areas that exceed the threshold value are identified so that the colored areas display a comparison** of the numerical values of the aggregated data. Moreover, the heights of the plural bars as displayed showed a comparison of the average values of the aggregated data for the

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plural bars to easily identify the difference in data distribution between the upper portions and lower portions of the plural bars; see Fig. 12a. Finally, Fig. 17 shows the high and low search criteria numerical value settings on the screen; see also Page 268 for this teaching in the cited reference. In Fig. 7 and Section 3.3-3.4, the different levels of the hierarchy are indicated by different heights of bars belonging to that level and the colored pixels corresponding to the different attribute values of the same data item have a unique position within the bars. In Section 3.1, it stated that the high dollar amounts correspond to bright colors and low dollar amounts to dark colors. In Figs. 7-8, 10, 12-17 and the corresponding description, a plurality of multi-pixel bar charts is shown with each bar chart reflects the data distribution in the pixel placement algorithm wherein data partitioning is based on the data histograms **and data distributions according to the coloring clusters and trends are illustrated therein**. For example, Page 266 describes the graphical illustration that displays the busiest time in the middle of the day during hours 9, 10, 12 and 14 having wider bar widths of the bars as shown in Fig. 16a. The wider bar widths clearly show a comparison in the numerical values of the aggregated data for the hours of concern. Moreover, the number of transactions are the numerical values of the aggregated data that are colored green in the pixel bar chart and therefore the numerical values of the aggregated data are displayed as green for comparison purposes. Moreover, in Fig. 16, red areas > **25 seconds response time** are colored red which are further used to display a comparison of the numerical values on the pixel bar chart. Finally, the average/median numerical values are shown as the heights of the plural bars. Moreover, the numerical values of the aggregated data for the plural bars are shown as the numbers on the top of the plural bars in Figs. 4, 10 and 12 in which Figs. 2 and 4 show the numerical values corresponding to the heights of the bars and so the

numerical values corresponding to the median lines of the bars in Fig. 12 are determined according to their heights.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 6-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by D. Keim, M.C. Hao; U. Dayal; “**Hierarchical pixel bar charts**”, IEEE Trans. On Visualization and Computer Graphics, Vol. 8, No. 3, July-Sept. 2002, pp. 255 – 269 (hereinafter Keim-2002).

Re Claim 1:

Keim-2002 **discloses a method for presenting data, comprising:**

**Receiving the data** (e.g., *Figures 2-4 of Keim-2002 disclose receiving a set of data items corresponding to a set of records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors*);

**Deriving a multi-level dynamic hierarchical structure** (*e.g., Figs. 7-8, 10, 12-17 and Section 3.3 demonstrated the pixel bar charts for the multi-dimensional data records with multiple attributes and each multi-level bar chart corresponds to a hierarchical structure*) **for the data based on drilldown sequences input from a user** (*e.g., layered drill-down/detail-on-demand as disclosed in Section 3.3 and interactive data exploration and each customer's detail information can be drilled down as needed; see Fig. 7-8 for the hierarchical pixel bar chart*), **wherein** (*SEE MPEP 2111.04 [R-3] "Adapted to," "Adapted for," "Wherein," and "Whereby" Clauses. Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. The Examiner suggests deleting the "wherein" clause to positively identify the following claim limitation. Nevertheless, the claim limitation is still treated in the present Office Action*) **the drilldown sequences automatically compute a graphical visual comparison** (*Figs. 7-8, 10 and 12-17 clearly shows the graphical visual comparison of the hierarchical pixel bar chart and the regular pixel bar chart*) **of the data and comprise:**

**Deriving a multi-pixel bar chart that simultaneously displays numerical values of aggregated data for plural bars** (*e.g., "Aggregated data" is a broad term and is thus subject to the broadest reasonable interpretation consistent with the specification. The distribution data for each of the pixel bar is the aggregated data. Figs. 7-8, 10, 12-17 and the corresponding description of the prior art illustrating a plurality of multi-pixel bar charts with each bar chart displaying an aggregated distribution paradigm of data records including the display of numerical values, e.g., Figs. 10, 12 and 16; See Section 5.2 describes that Fig. 12 has displayed the height of a bar to show the average or aggregated value and the average/median lines are*

shown to separate a bar into two parts and therefore the average/median numerical values are shown as the heights of the plural bars. Moreover, the numerical values of the aggregated data for the plural bars are shown as the numbers on the top of the plural bars in Figs. 4, 10 and 12 in which Figs. 2 and 4 show the numerical values corresponding to the heights of the bars and so the numerical values corresponding to the median lines of the bars in Fig. 12 are determined according to their heights); and

**Deriving a graphical illustration that displays a comparison of the numerical values** (See column 1, Page 264 for Threshold interaction and Average/Median Lines wherein the cited reference teaches thresholds can be interactively changed and thus displayed as needed and the areas that exceed the threshold value are identified so that the colored areas display a comparison of the numerical values of the aggregated data. Moreover, the heights of the plural bars as displayed showed a comparison of the average values of the aggregated data for the plural bars to easily identify the difference in data distribution between the upper portions and lower portions of the plural bars; see Fig. 12a. Finally, Fig. 17 shows the high and low search criteria numerical value settings on the screen; see Page 268 for this teaching in the cited reference. See also Fig. 7 and Section 3.3-3.4 wherein the different levels of the hierarchy are indicated by different heights of bars belonging to that level and the colored pixels corresponding to the different attribute values of the same data item have a unique position within the bars. See Section 3.1 the high dollar amounts correspond to bright colors and low dollar amounts to dark colors. Moreover, the numerical values of the aggregated data for the plural bars are shown as the numbers on the top of the plural bars in Figs. 4, 10 and 12 in which Figs. 2 and 4 show the numerical values corresponding to the heights of the bars and so the

numerical values corresponding to the median lines of the bars in Fig. 12 are determined according to their heights) of aggregated data (e.g., Figs. 7-8, 10, 12-17 and the corresponding description illustrated a plurality of multi-pixel bar charts with each bar chart reflects the data distribution in the pixel placement algorithm wherein data partitioning is based on the data histograms and data distributions according to the coloring clusters and trends are illustrated therein. For example, Page 266 describes the graphical illustration that displays the busiest time in the middle of the day during hours 9, 10, 12 and 14 with wider bar widths of the bars in Fig. 16a wherein the wider bar widths clearly show a comparison in the numerical values of the aggregated data for the hours of concern. Moreover, the number of transactions are the numerical values of the aggregated data that are colored green in the pixel bar chart and therefore the numerical values of the aggregated data are displayed as green for comparison purposes. Moreover, in Fig. 16, red areas > 25 seconds response time are colored red which are used to display a comparison of the numerical values on the pixel bar chart. Finally, the average/median numerical values are shown as the heights of the plural bars. Moreover, the numerical values of the aggregated data for the plural bars are shown as the numbers on the top of the plural bars in Figs. 4, 10 and 12 in which Figs. 2 and 4 show the numerical values corresponding to the heights of the bars and so the numerical values corresponding to the median lines of the bars in Fig. 12 are determined according to their heights).

In other words, Keim-2002 discloses hierarchical pixel bar charts to exploit the hierarchy and split the bars for selected portions of the hierarchy to show more detailed information for the selected portion of the data (Section 3.3 on Page 258). Keim-2002 discloses in Fig. 8(b) a data distribution paradigm. Moreover, Keim-2002 discloses in Fig. 8(b) the claim limitation of



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deriving a multi-level dynamic hierarchical structure (Section 3.3 of Keim-2002) for the data based on drilldown sequences input from a user by the layered drill-down/detail-on-demand as disclosed and interactive data exploration and each customer's detail information can be drilled down as needed wherein the interactive selection allows the user to drill-down to see more details for interesting subsets of the data (Section 3.3 of Keim-2002), wherein the drilldown sequences automatically compute a graphical visual comparison of the data and comprise: deriving a multi-pixel bar chart to display an aggregated distribution paradigm and deriving a graphical illustration to display a data distribution paradigm (**Page 258 and Section 3.3 and Fig. 7(b), Fig. 8(b)**).

Re Claim 3:

The claim 3 encompasses the same scope of invention as that of the claim 1 except additional claim limitation the plural bars of the multi-pixel bar chart have equal heights.

However, Keim-2002 further discloses the plural bars of the multi-pixel bar chart have equal heights (e.g., Figs. 5 and 16).

Re Claim 6:

The claim 6 encompasses the same scope of invention as that of the claim 1 except additional claim limitation inputting preferences from the user for a plurality of different levels of the multi-level hierarchical structure.

However, Keim-2002 further discloses the claim limitation inputting preferences from the user for a plurality of different levels of the multi-level hierarchical structure (e.g., the

partitioning algorithm assigns each data record to the corresponding bar according to the partitioning attributes and the attributes used for partitioning, ordering and coloring can be selected and changed at execution time). Keim-2002 discloses in Section 5.3 and Fig. 7(b) inputting preferences from the user for a plurality of different levels of the multi-level hierarchical structure.

Re Claim 7:

The claim 7 encompasses the same scope of invention as that of the claim 1 except additional claim limitation deriving a multi-pixel bar chart further comprises ordering a plurality of bars according to product ranking.

However, Keim-2002 further discloses the claim limitation deriving a multi-pixel bar chart further comprises ordering a plurality of bars according to product ranking (e.g., Fig. 6 shows dividing attributes on x-axis being the product ranking/ordering according to the product type). Keim-2002 discloses in Section 3.3, 5.3 and Fig. 8(b) ordering a plurality of bars according to product ranking.

Re Claim 8:

The claim 8 encompasses the same scope of invention as that of the claim 7 except additional claim limitation arranging three consecutive bars to have a highest ranking and arranging three consecutive bars to have a lowest ranking.

However, Keim-2002 further discloses the claim limitation arranging three consecutive bars to have a highest ranking and arranging three consecutive bars to have a lowest ranking

(e.g., Figs. 4 and 6 shows dividing attributes on x-axis being the product ranking/ordering according to the product type wherein Fig. 4 shows the three-consecutive bars of the highest ranking and the three-consecutive bars of the lowest ranking). Keim-2002 discloses in Section 5.3 and Fig. 8(b) arranging three consecutive bars to have a highest ranking and arranging three consecutive bars to have a lowest ranking as arranged in the pixel bar chart.

Re Claim 9:

The claim 9 encompasses the same scope of invention as that of the claim 1 except additional claim limitation coloring pixels green and coloring pixels red and the green pixels representing higher sales than the red pixels.

However, Keim-2002 further discloses the claim limitation coloring pixels green and coloring pixels red and the green pixels representing higher sales than the red pixels (e.g., Figs. 5 and 16 shows the coloring of pixels to green or red and dark colors representing higher sales). Keim-2002 discloses in Section 5.3 and Fig. 8(b) coloring pixels green and coloring pixels red and the green pixels representing higher sales than the red pixels.

Re Claim 10:

Keim discloses:

Determining a set of attributes for placement of the data in a pixel bar chart having plural bars that each include a plurality of pixels with each pixel encoded with a portion of the data (e.g., Figures 2-4 of Keim-2002 disclose receiving a set of data items corresponding to a set of

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*records such as e-commerce sales transactions with data records having such attributes as product type, number of visits and dollar amounts; the product type is used later as the partitioning attribute and the number of visits and dollar amounts as the x and y ordering attributes. The color represents the dollar amount spent by the corresponding customer wherein high dollar amounts correspond to bright colors and low dollar amounts to dark colors);*

Drilling down from the pixel bar chart to derive (1) another pixel bar chart that displays numerical values of aggregated data for each of plural bars (e.g., Figs. 7-8, 10, 12-17 and the corresponding description illustrating a plurality of multi-pixel bar charts with each bar chart displaying an aggregated distribution paradigm of data records including the display of numerical values, e.g., Figs. 10, 12 and 16; See Section 5.2 describes that Fig. 12 has displayed the height of a bar to show the average or aggregated value and the average/median lines are shown to separate a bar into two parts and therefore the average/median numerical values are shown as the heights of the plural bars. Moreover, the numerical values of the aggregated data for the plural bars are shown as the numbers on the top of the plural bars as shown in Figs. 4, 10 and 12) and (2) a graph that displays a comparison of the numerical values (See column 1, Page 264 for Threshold interaction and Average/Median Lines wherein the cited reference teaches thresholds can be interactively changed and thus displayed as needed and the areas that exceed the threshold value are identified so that the colored areas display a comparison of the numerical values of the aggregated data. Moreover, the heights of the plural bars as displayed showed a comparison of the average values of the aggregated data for the plural bars to easily identify the difference in data distribution between the upper portions and lower portions of the plural bars; see Fig. 12a. Finally, Fig. 17 shows the high and low search criteria numerical

*value settings on the screen; see Page 268 for this teaching in the cited reference. See also Fig. 7 and Section 3.3-3.4 wherein the different levels of the hierarchy are indicated by different heights of bars belonging to that level and the colored pixels corresponding to the different attribute values of the same data item have a unique position within the bars. See Section 3.1 the high dollar amounts correspond to bright colors and low dollar amounts to dark colors) of aggregated data (e.g., Fig. 2(a) also displays a graph that displays a comparison of the numerical values of aggregated data. A pixel bar chart is also a graph that displays a comparison of the numerical values of the aggregated data, e.g., Fig. 12 demonstrates the comparison of the average/median values for the plural bars. Moreover, each of the month numbers in the bar chart collectively represent each of the bars in the pixel bar chart and thus the numbers represent the numerical values of the aggregated data for the plural bars wherein comparison is shown by the colors of the pixels in the red area, green area, etc. representing the numerical values of the aggregated data beyond the threshold values because the data beyond the threshold values are collectively represented by the same color as visually displayed in the bar chart. Figs. 7-8, 10, 12-17 and the corresponding description illustrated a plurality of multi-pixel bar charts with each bar chart reflects the data distribution in the pixel placement algorithm wherein data partitioning is based on the data histograms and data distributions according to the coloring clusters and trends are illustrated therein. For example, Page 266 describes the graphical illustration that displays the busiest time in the middle of the day during hours 9, 10, 12 and 14 with wider bar widths of the bars in Fig. 16a wherein the wider bar widths clearly show a comparison in the numerical values of the aggregated data for the hours of concern. Moreover, the number of transactions are the numerical values of the aggregated*

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data that are colored green in the pixel bar chart and therefore the numerical values of the aggregated data are displayed as green for comparison purposes. Moreover, in Fig. 16, red areas > 25 seconds response time are colored red which are used to display a comparison of the numerical values on the pixel bar chart. Finally, the average/median numerical values are shown as the heights of the plural bars. Moreover, the numerical values of the aggregated data for the plural bars are shown as the numbers on the top of the plural bars as shown in Figs. 4, 10 and 12).

Keim-2002 discloses hierarchical pixel bar charts to exploit the hierarchy and split the bars for selected portions of the hierarchy to show more detailed information for the selected portion of the data (Section 3.3 on Page 258). Keim-2002 discloses in Fig. 8(b), in a different setting, a data distribution paradigm. Moreover, Keim-2002 discloses in Fig. 8(b) the claim limitation of deriving a multi-level dynamic hierarchical structure (Section 3.3 of Keim-2002) for the data based on drilldown sequences input from a user by the layered drill-down/detail-on-demand as disclosed and interactive data exploration and each customer's detail information can be drilled down as needed wherein the interactive selection allows the user to drill-down to see more details for interesting subsets of the data (Section 3.3 of Keim-2002), wherein the drilldown sequences automatically compute a graphical visual comparison of the data and comprise: deriving a multi-pixel bar chart to display an aggregated distribution paradigm and driving a graphical illustration to display a data distribution paradigm (**Page 258 and Section 3.3 and Fig. 7(b), Fig. 8(b))**).

Re Claim 11:

The claim 11 encompasses the same scope of invention as that of the claim 10 except additional claim limitation constructing a multi-level hierarchical tree having a plurality of different levels to graphically illustrate at least a portion of the data.

However, Keim-2002 further discloses constructing a multi-level hierarchical tree having a plurality of different levels to graphically illustrate at least a portion of the data (e.g., Figs. 7-8 and Section 3.3 illustrated a plurality of multi-pixel bar charts with each pixel bar charts having a multi-level hierarchical structure).

Re Claim 12:

The claim 12 encompasses the same scope of invention as that of the claim 10 except additional claim limitation the graphically displayable array comprises an X-axis and a Y-axis.

However, Keim-2002 further discloses the claim limitation the graphically displayable array comprises an X-axis and a Y-axis (e.g., Figs. 3 and 6 wherein the pixel bar charts comprise an X-axis and a Y-axis).

Re Claim 13:

The claim 13 encompasses the same scope of invention as that of the claim 12 except additional claim limitation the X-axis representing a data category and the Y-axis representing a data value.

However, Keim-2002 further discloses the claim limitation the X-axis representing a data category and the Y-axis representing a data value (e.g., Figs. , 6 and 7-8 wherein the pixel bar

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charts comprise an X-axis and a Y-axis wherein the X-axis represents the product type and the Y-axis represents dollar amount).

Re Claim 14:

The claim 14 encompasses the same scope of invention as that of the claim 10 except additional claim limitation each pixel is encoded with a color.

However, Keim-2002 further discloses the claim limitation each pixel is encoded with a color (e.g., Figs. 2, 6 and 7-8 wherein each pixel is encoded with color such as the coloring for the region, quantity, dollar amount or the no. of visits).

Re Claim 15:

The claim 15 encompasses the same scope of invention as that of the claim 14 except additional claim limitation the pixels are encoded with a plurality of different colors.

However, Keim-2002 further discloses the claim limitation the pixels are encoded with a plurality of different colors (e.g., Figs. 2, 6, and 7-8 wherein pixels are illustrated with darker colors or light colors).

Re Claim 16:

The claim 16 is subject to the same rationale of rejection set forth in the claim 10.

Re Claim 17:

The claim 17 encompasses the same scope of invention as that of the claim 16 except additional claim limitation the graphical illustration to display an aggregated data paradigm is based on attributes from a previous hierarchical level.



However, Keim-2002 further discloses the claim limitation inputting the graphical illustration to display an aggregated data paradigm is based on attributes from a previous hierarchical level (*e.g., Section 3.3 discloses layered drill-down and detail-on-demand and multiple linked visualization allows the viewing of all related information after selecting a single data item*).

Re Claim 18:

The claim 18 encompasses the same scope of invention as that of the claim 16 except additional claim limitation the data distribution paradigm provides a chart with multiple colors to visually signify changes in data distribution at a record level.

However, Keim-2002 further discloses the claim limitation the data distribution paradigm provides a chart with multiple colors to visually signify changes in data distribution at a record level (*e.g., Fig. 16 shows the coloring of pixels to green or red and dark colors representing higher sales and data distributions according to the coloring clusters and trends are illustrated therein; see Page 266*).

Re Claim 20:

The claim 20 encompasses the same scope of invention as that of the claim 16 except additional claim limitation the data distribution paradigm comprises over one million data records.

However, Keim-2002 further discloses the claim limitation the data distribution paradigm comprises over one million data records (*e.g., Fig.16 disclose a large number of transaction records*).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4-5 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over D. Keim, M.C. Hao; U. Dayal; “**Hierarchical pixel bar charts**”, IEEE Trans. On Visualization and Computer Graphics, Vol. 8, No. 3, July-Sept. 2002, pp. 255 – 269 (hereinafter Keim-2002) and Friedman et al. U.S. Patent No. 5,893,090 (hereinafter Friedman).

**Re Claim 4:**

The claim 4 encompasses the same scope of invention as that of the claim 1 except additional claim limitation that deriving a graphical illustration further comprises providing a comparison of product sales with average product sales to derive a difference in product sales.

Although Keim-2002 does not expressly disclose, “providing a comparison of product sales with average product sales to derive a difference in product sales”, Keim-2002 discloses the ordering and partitioning attribute with the ordering and partitioning attribute including the difference between each of the product sales and average product sales wherein the comparison is performed by the clustered colored pixels. Keim-2002’s Figs. 12-13 uses the height of a bar to show the average or aggregated value.

Keim-2002 discloses thresholding interaction on Page 264 wherein the user can define a threshold to identify the areas that exceed a value, for example, the areas above the threshold are colored red. Moreover, Keim-2002 also discloses pixel bar charts employing average/median lines that separates a bar into two parts with the upper part of the data exceeds the average/median value and the lower part of the data being below the average/median value (Keim-2002 Fig. 12a). Keim-2002 has disclosed the claim limitation of comparison in the pixel bar chart.

Friedman discloses the querying of data records and calculating the average from the data records and thus the difference between each of the product sales of the data records and the average product sales of the data records are calculated by querying statement (See Friedman column 4, lines 50-60 and column 6, lines 1-38). One of the ordinary skill in the art knows that the querying statement for the data records includes providing a comparison of product sales with average product sales to derive a difference in product sales.

It would have been obvious to one of the ordinary skill in the art to have modified Keim-2002's teaching and to have incorporated Friedman's teaching into Keim-2002 because in Keim-2002's pixel array ordering and grouping may be selected in accordance to the recalculated/renormalized product sales from the data records such that the product sale for each individual data record as being the original product sale minus the average product sale and such calculation is enabled by the querying statement according to the teaching of Friedman.

One of the ordinary skill in the art would have been motivated to visualize large volumes of multi-attribute data sets to explore and interpret the pixel bar chart system based on an ordering and partitioning attribute based on the querying statement (Keim-2002 Section 5.2).

Re Claims 2 and 5:

The claim 2 (5) encompasses the same scope of invention as that of the claim 1 except additional claim limitation of deriving standard deviations between a plurality of products.

Although Keim-2002 does not expressly disclose of deriving standard deviations between a plurality of products, Keim-2002 discloses the ordering and partitioning attribute with the ordering and partitioning attribute including the standard deviation between a plurality of products.

Friedman discloses the querying of data records and calculating the standard deviation from the data records and thus the standard deviations are calculated by querying statement for the data records (See Friedman column 4, lines 50-60 and column 6, lines 1-38). One of the ordinary skill in the art knows that the querying statement for the data records includes providing the deviation between a plurality of products from the data records.

It would have been obvious to one of the ordinary skill in the art to have modified Keim-2002's teaching and to have incorporated Friedman's teaching into Keim-2002 because in Keim-2002's pixel array ordering and grouping may be selected in accordance to the standard deviation of the data records and such calculation is enabled by the querying statement according to the teaching of Friedman. Keim-2002 teaches the interactive data exploration and visual querying and thus suggesting querying the standard deviation of the data records.

One of the ordinary skill in the art would have been motivated to visualize large volumes of multi-attribute data sets to explore and interpret the pixel bar chart system based on an ordering and partitioning attribute for analyzing the patterns, correlations and trends (Keim-2002 Section 5.2) by the querying statement.

Re Claim 19:

The claim 19 encompasses the same scope of invention as that of the claim 16 except additional claim limitation that deriving a graphical illustration further comprises providing a comparison of dollar amount of product sales with a dollar amount of average product sales.

Although Keim-2002 does not expressly disclose, “deriving a graphical illustration further comprises providing a comparison of dollar amount of product sales with a dollar amount of average product sales”, Keim-2002 discloses the ordering and partitioning attribute wherein the ordering and partitioning attribute may be dollar amount of product sales or a dollar amount of average product sales.

Keim-2002 discloses thresholding interaction on Page 264 wherein the user can define a threshold to identify the areas that exceed a value, for example, the areas above the threshold are colored red. Moreover, **Keim-2002 also discloses pixel bar charts employing average/median lines that separates a bar into two parts with the upper part of the data exceeds the average/median value and the lower part of the data being below the average/median value** (Keim-2002 Fig. 12a) and thus Keim-2002’s hierarchical pixel bar charts provide a comparison of dollar amount of product sales with a dollar amount of average product sales when applied to the product sales transaction data records of Keim. Keim-2002 has disclosed the claim limitation of comparison in the pixel bar chart.

Friedman discloses the querying of data records and calculating the average from the data records and the average product sales of the data records are calculated by querying statement (See Friedman column 4, lines 50-60 and column 6, lines 1-38). One of the ordinary skill in the

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art knows that the querying statement for the data records include providing a comparison of dollar amount of product sales with a dollar amount of average product sales.

It would have been obvious to one of the ordinary skill in the art to have modified Keim-2002's teaching and to have incorporated Friedman's teaching into Keim-2002 because Keim-2002's pixel array ordering and grouping may be selected in accordance to the dollar amount of product sales or a dollar amount of average product sales and the aggregate querying is enabled by the querying statement according to the teaching of Friedman.

One of the ordinary skill in the art would have been motivated to visualize large volumes of multi-attribute data sets to explore and interpret the pixel bar chart system based on an ordering and partitioning attribute by the visual querying (Keim-2002 Section 5.2).

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw



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